

# Bounding Space: A Cross-Disciplinary Foundation Design Unit

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*Streamlining becomes here an organic force as it relates to the dynamic equilibrium of the motion of the body within encompassed space.*

—Frederick Kiesler, “Pseudo-Functionalism in Modern Architecture”

*Whatever occupies space always forms the border between an outside and an inside. But the interior is really only an exterior lying farther back. But where in the world would there be an outside and an inside, if not in space?*

—Martin Heidegger, “The Thing”

## INTRODUCTION

The cognition and description of spatial conditions are essential components of any foundation for the design and visual arts. However, the ability to discern subtle spatial distinctions and the limits of spatial boundaries is often clouded by habit and apparent familiarity with the conditions in question. For example, one thinks one “knows” the spatial make-up of one’s bedroom, but can one really see the space of the room from a position outside of this perceived familiarity? Or, to invert the question, how can one know a space that one sees with new eyes? Perhaps we need to take Paul Valery to heart when he suggests that; “to see is to forget the name of the thing one sees.”

The process of seeing a thing is a process of defamiliarization. This process involves an abstraction of the familiar object (or space) which allows one to step outside of the familiar and habitual understanding of the thing. Orthographic Architectural drawings can be part of this process, but as Frederick Kiesler wrote, “The floor plan is no more than the footprint of the house. From a flat impression of this sort it is difficult to conceive the actual form and content of the building. If God had begun the creation of man with a footprint, a monster all heels and toes would probably have grown up from it, not man.” The process must be spatial.

This inter-disciplinary design unit provides first year Visual Literacy students with both foundation skills and a glimpse into the mysteries of the familiar by focusing on a particular aspect of the formal: Boundaries. As the second semester Form Unit, the three-week unit expands the first semester’s emphasis on the superficial

qualities of surface to a fully three-dimensional and robust understanding of Form. In the work presented here we illustrate the developing categorizations of Boundaries that range from actual, precise, and material (Bona Fide) limits to spatial, legal, immaterial, and ephemeral (Fiat) boundaries. These terms are introduced in the studio as part of an effort to help the students develop not only a complex understanding of form and space, but also a view of design as the resultant vector of an analytical approach to a place. For the purposes of the Form Unit, all projects share a common ground as analyses of the student’s most familiar place, her bedroom.

## THE COURSE WITHIN THE UNIVERSITY

Visual Literacy is a three-year-old cross-disciplinary instruction unit that encompasses a learning community of Textile and Clothing Design, Architecture, Interior Design, and Fine Art students in their first year of foundation design education. The pedagogy we present here is a four week long unit (with 9 hours of contact time per week) in a two semester long program. Each faculty member teaches one of four thematically charged instructional units through which groups of students (20 students per studio) rotate over the course of a semester. The thematic foci of the four units are Drawing, Color, Frame (composition), and Form (the subject of this discussion.) Though taught by architecture faculty, every effort is made to keep the Form rotation focused on an interdisciplinary, foundation design sensibility rather than allowing the study of Form become “the architecture unit.”

## PATHS OF STUDY THAT RUN THROUGH THE COURSE

Of the roster of students who enter the “Vis Lit” program it can be expected that less than two-thirds will matriculate through professional design programs of study in which they will learn to actively alter the environment around us through Art, Architecture, Interior Design, or Textile and Clothing Design (TCD). Statistically, the number of students who do not pursue one of the design arts through to graduation may be approximately one-third. Stat source?? Therefore, in its position as an introduction to the world of the arts it

seems Visual Literacy exists for two fundamental reasons: 1. to begin design foundation curriculum instruction for a set of students who will go on to traditional roles in the design fields, and 2. to offer an opportunity to those students who, if given the tools, appreciation, and understanding, can impact the visual arts as intellectual patrons or simply through the application of design principles in everyday life.

An analogous pedagogical model could be drawn from Italy where one of the most common “first degrees” (bachelor’s level) in college education is an architectural one. The goal of such programs is not to mould each student into a practitioner or to flood the professional market with architects, but to use architectural training as a strong and broad “liberal arts” foundation for further study in a variety of fields. In Italy, architecture is understood as a valuable and canonical appreciation to have in any segment of society. To put the position of the Visual Literacy Program within the university more succinctly, we are teaching both the fundamentals of design and basic design culture with the same pedagogy. Design culture includes worlds of patronage, fetish, appreciation, connoisseurship, criticism, and fellowship through the creative arts. To ignore or downplay the opportunity for the immersion of a broad collegiate community in design culture through the Visual Literacy program is to miss (at least) half the opportunity at hand. What is needed is a pedagogy in Visual Literacy that teaches the superficial qualities of Form and Form-Making to all student Visual Literacy tracks in an engaging way that neither becomes “design for non-majors” nor a “Pieta Making 101” course.

## THE INTELLECTUAL FOCUS OF THE UNIT

In the same way that direction and speed are the component conditions of Velocity, surface and volume are the elementary conditions almost universally found in three-dimensional Form. Whereas the first semester Form unit focussed on the definition of surfaces as visual and tactile manifestations of material Form (what we call a Bona Fide Boundary,) the second semester adds another degree of complexity with the notion of the surface of an immaterial spatial boundary (a Fiat Boundary). These terms share a topological origin and are best described by the following passage from Barry Smith and Achille C. Vazi:

*Consider John, the moon, a lump of cheese. These are objects possessed of divisible bulk. They can be divided, in reality or in thought, into spatially extended parts. They have interiors. They also have boundaries, which we can think of (roughly) as infinitely thin slices. The boundary of the moon is the lunar surface. The boundary of John is the surface of his skin.*

*But what of inner boundaries, the boundaries of the interior parts of things? There are many genuine two-dimensional (sphere- and torus-like) boundaries within the interior of John’s body in virtue of the differentiation of his body into organs, cells, and so on. Imagine, however, a spherical ball made of some perfectly homogenous prime matter. If the possession by an object of genuine inner boundaries presupposes either some interior spatial*

*discontinuity or qualitative homogeneity, then there is a sense in which there are no boundaries to be acknowledged within the interior of an object at all.*

*Yet we do sometimes speak of inner boundaries even in the absence of any corresponding physical discontinuity or qualitative differentiation. Even in relation to a homogenous sphere we can still talk sensibly of its upper and lower hemispheres, its center of mass, and so on. We shall call the inner boundaries involved in such cases fiat boundaries. Inner boundaries involving spatial discontinuity (holes, fissures, slits) or qualitative heterogeneity (of material constitution, texture, electric charge) we shall call bona fide boundaries.*

In Vis Lit we propose that Bona Fide Boundaries are all physical edges, surfaces, and discontinuities while Fiat Boundaries are immaterial surfaces defined by the movement of a body in space (the student moving in the room.) Thus, the Bona Fide Boundary is defined by walls, windows, mouldings, furniture, and objects within the room. As the Fiat Boundary of a particular event or aggregate of several events is secondary in that it is defined not only by the actor but also by the Bona Fide Boundary itself. We describe the space between the Bona Fide Boundary of the room and the Fiat Boundary as an Interstitial Space. The unit is consequently split into three segments: The first focuses on analyzing and representing the Bona Fide Boundary of the room, the second on the Fiat Boundary as defined by a selection of typical events, and the third on synthesizing this information and discovering the shared Interstitial Space.

### Questions that are addressed in this unit are:

What is Space?

What defines and delimits Spaces?

What are the differences between Fiat and Bona Fide Boundaries of space?

How can one graphically record a space?

How can one construct a spatial model from two-dimensional information?

How does motion impact the perception of space?

Are objects prior to the space around them?

The ultimate goal of the unit is to help students look at spaces in a more complex way and to realize that spaces are defined by boundaries. The students explore a range of surface boundary categories (between Fiat and Bona Fide) as they are perceived in the space of a room (their abode) and the non-material spatial boundaries defined by the everyday trajectories of events that occur in their abode. Skills of description, representation, and reconstruction are explored not through design so much as analysis. While this unit plays in the consequences of bodily movement on Form (and vice versa),

other units in the course explore the body in different ways, providing a cohesiveness to the course as a whole.

### THE UNIT METHODOLOGY

The unit is made up of a series of highly focused and discrete but additive and incremental exercises where the thoughts and products of one day becomes the basic material for the next. This pedagogic structure, including the discussion about the product that emerges from it, effectively helps to build an understanding that is not based in architecture or any other discipline. A major component of the daily instruction is a time in which the students talk about each other's work in a critical way. In the execution of this critique it is strongly stressed that the conversation about the contents of the work focus on adjectives and verbs on the subject of the analysis rather than the metaphors of external reference. So, statements of fact such as "It is..." rather than "It looks like..." are encouraged. The value of this self-referential nature for the Visual Literacy student is enhanced when it is tailored to be non-representational, and it is open to a diversity of external references in criticism (drapery, landscape, flesh, etc.) The removal of the idea-generating phase of design allows the student to approach making directly and with a modicum of objectivity so the discourse of the studio does not founder on issues of taste. Ultimately, these exercises based in "A-disciplinary" tactics result in solutions for cross-disciplinary strategies demanded by the demographics of Visual Literacy.

### THE ROLE OF DRAWING AND OTHER TECHNIQUES:

In this unit graphic techniques common to any one disciplinary field are eschewed for methods that are either hybrid, primitive, or obscure within our design disciplines yet invoke a strong lesson in form making. In this rotation drawing has as much in common with a pattern in dress-making, Duchamp's "Standard Stoppages", and templates in graphic design as it does with a tectonic designer's building section. Drawing becomes not only a tool for analysis and description but of abstraction. Traditional orthographic projections (sections in elevational and planimetric orientation) are employed as a means to defamiliarize the visual apprehension of surfaces and boundaries in a room (see the Cardinal and Cat-Scan exercises.) Other techniques are similarly used in sequence to further distance the student's understanding of space from the familiar scenographic representations of space's physical boundaries. Most of these techniques, while utilizing different tools such as the computer and digital media, are understood as various methods of drawing. Techniques such as chrono-photography and digital modeling are used to "draw" time (record time-based activities with lines in space.) The computer is used to draw in three-dimensions by translating two-dimensional information. Chrono-photography collapses the trajectories of a three dimensional event onto a still surface. By moving back and forth between techniques from one exercise to the

next the student gains an ability to blend media and methodologies in what Rosalind Krauss has termed a "post-medium condition."

### A VISUAL & DESCRIPTIVE UNIT CHRONOLOGY FROM START TO FINISH

The instructors assign each of the following exercises with a lecture on theory and precedents and typically give the students one class interval (two days) to complete the work for an in class pin-up for the next class meeting time.

- Photo-collage of the room

In the first exercise students are asked to make a photo-mosaic or constructed-frame photograph of the type made popular by the artist David Hockney. With prints from a full role of film, students construct a collage-image depict-



ing the entirety of their room. Unlike a normal photograph, the photo-collage challenges the student to take a more active role in the image making process in such a way that depicting becomes both objective and creative at the same time. These images serve as a reference point for student, the instructors, and the rest of the class of the "familiar" state of the room.

- Catalogs of objects and events which "take-place" within the room

To better understand the role of possessions in the act of inhabitation and personalizing a room, the students next make a graphic catalog of the contents of the room organized with a clear typological structure. As part of the same exercise, the students make a list of 20 activities that they performed on a typical day in the room. For example:

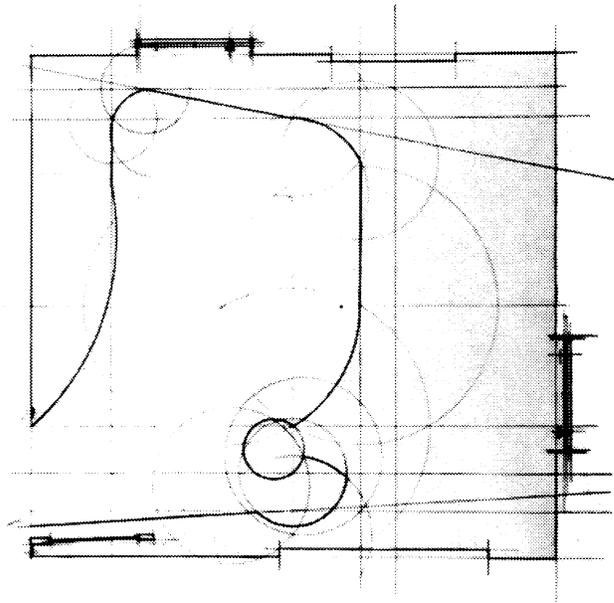
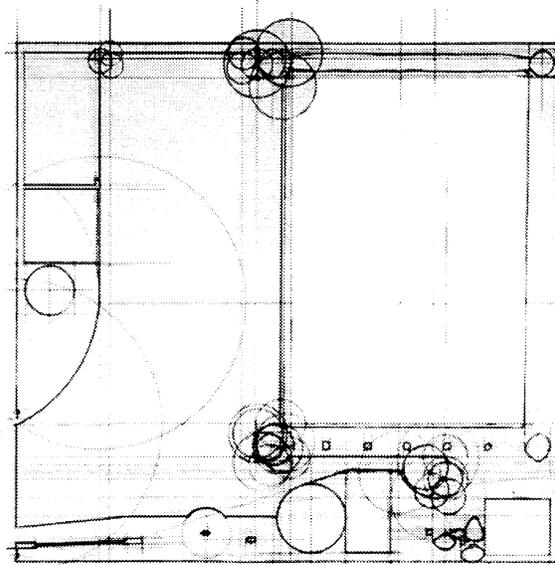
## ACTION LIST

1. sleep
2. get out of bed
3. get clothes out of dresser/closet
4. get dressed
5. put socks and shoes on feet
6. "style" hair
7. apply antiperspirant/deodorant
8. leave room
9. enter room
10. sit in chair thinking of ways to pass time
11. read
12. sip r.c. soda
13. mess with stereo
14. put kraftwerk record on
15. watch pokemon
16. make shoddy attempt at rocking out on base
17. turn kraftwerk record over
18. get snack
19. eat snack
20. watch alf
21. pog
22. use wiffle golf ball as a projectile
23. drink restaurant quality lemonade
24. watch craig kilborn
25. homework
26. remove shoes and socks from feet
27. take off clothes
28. get into bed
29. sleep

The students title and describe each event on a separate 3 x 5 index card so the chronological categorization of the list can be supplemented with other taxonomies. These groupings could be based on duration, intensity, volume of space occupied, superimposition, and so on.

- Cardinal sections of the room

In the most conventionally architectural exercise, students measure the momentary section through the middle of the room "in situ" through each of the cardinal directions (horizontal at the mid-point between floor and ceiling, vertical side to side, and vertical front to back). These sections

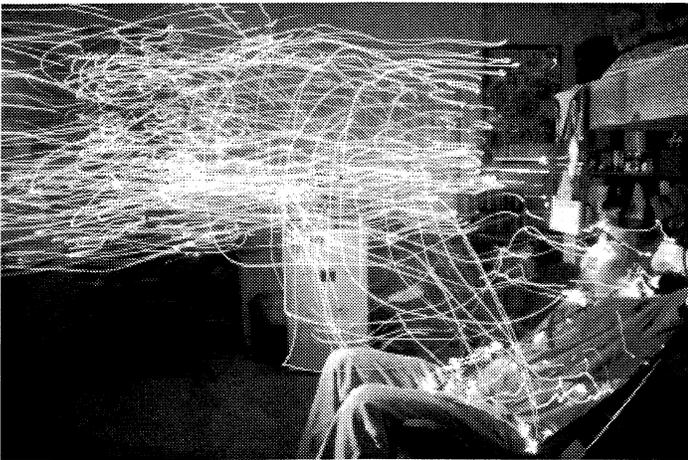


follow the profiles of wall or furniture as the student cuts through a specific part of the room, but they do not show the interiors or construction layers of the objects. Thus, the surface of a piece of furniture becomes continuous with the wall or floor depending on the placement of the object. All construction and “regulating” lines are to be preserved. The line on these drawings represents a Bona Fide Boundary of the room.

- Cat-Scan sections of the Room

After selecting one of the cardinal section drawings, the student draws a series of sections at one-foot intervals across the entire room in the same orientation with respect to the room as the original. Like the original section, these sections show the profile of any object that they happen to intersect. Drawn on translucent media, these sections overlay to produce an abstraction of the bona-fide bounds of the room in the manner of a series of sections used to create a 3-D image in a digital environment.

- Chrono-photographic study of activities

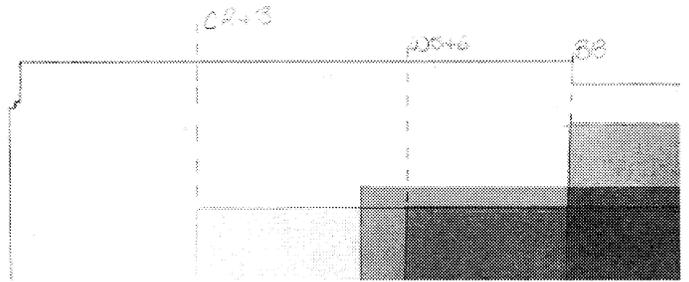


*But we must not confound the data of the senses, which perceive the movement, with the artifice of the mind, which recomposes it. The senses, left to themselves, present to us the real movement, between two real halts, as a solid and undivided whole. The division is the work of our imagination...like the instantaneous flash which illuminates a stormy landscape by night.*

—Henri Bergson

In *Matter and Memory*, Bergson developed a very clear presentation of what movement is and what relationships can be drawn between movement and matter. Bergson, like many others of his time, was very much affected by photographic studies that collapsed movement (the time-motion studies of Marey or Muybridge for instance). Specifically, he and others were intrigued by how such records of movement should effect the arts. This kind of thinking had profound influence on Futurism, dada, and Cubism. One of the distinctions that can be inferred from Bergson about movement is that there are two ways to measure or quantify movement: 1. in the relative terms of a geometer where things are measured according

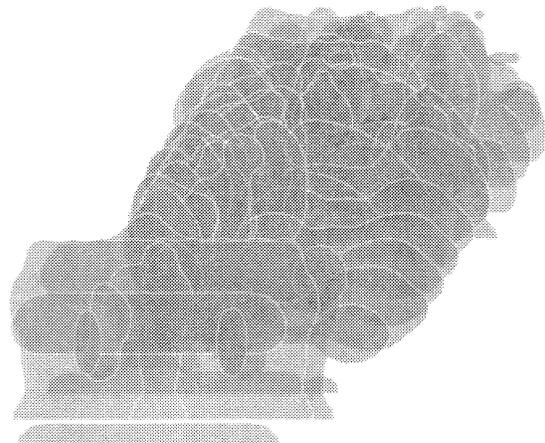
to something (a coordinated reference) beyond the action in question or, 2. in the real terms of a physicist where things are measured according to conditions internal to the event or action in question. As students begin to find the various bounding spaces of their rooms they will begin with the real and the specific, quantifying individual events or actions by evaluating their own internal structures.

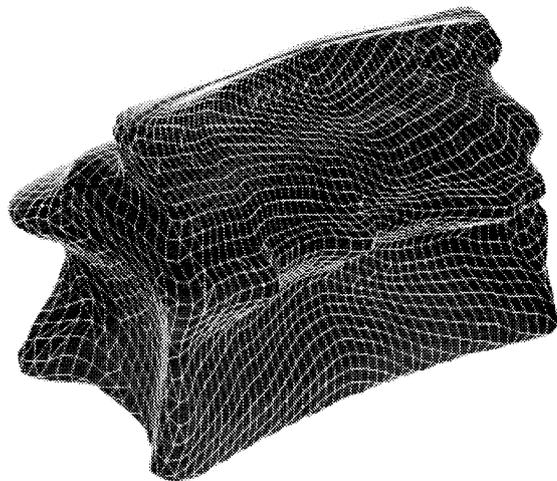


The chrono-photographic exercise adds an element of time to the documentation process and is associated with Bergson’s second class of measurement. In collaborative groups of three or four, students make a roll of time-exposed slides documenting several actions as they take place in their rooms over the course of a few seconds or minutes each. Actions and events are represented spatially by the trails of lights worn by the students as they perform the activity before the open shutter. Students select all of the actions introduced into this experiment from the original list made in the second exercise, and when viewed in sequence, the images produce a record of the space occupied by selected groupings from the the event catalog.

- Computer modeling

With a photographic record of events in space (represented from perpendicular points of view) the students construct three-dimensional computer models in Form-Z of the “solid” space “consumed” by the movement depicted. The





new solid model created represents the surface of a Fiat Boundary that in this case, is a non-material boundary in space. When cut into sections, these solid models can then be translated back into drawing form and combined with the Cat-Scan sections.

- Fiat Boundary

To each completed Cat-Scan vellum, students add the Fiat Boundary, as it would appear at each particular plane cut through the room. While this boundary is an abstraction, students must give it a level of detail that corresponds to the previous drawing assignments. This exercise introduces the notion of interstitial space as students can begin to discern a relationship between the Fiat and Bona-Fide boundaries of the room.

- The Radical Reconstruction Exercise

*A thing is a hole in a thing it is not.*

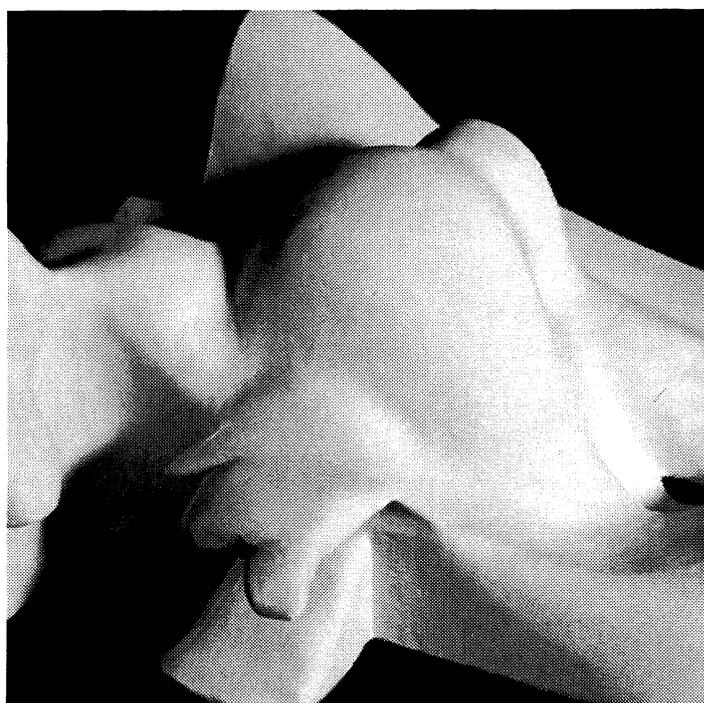
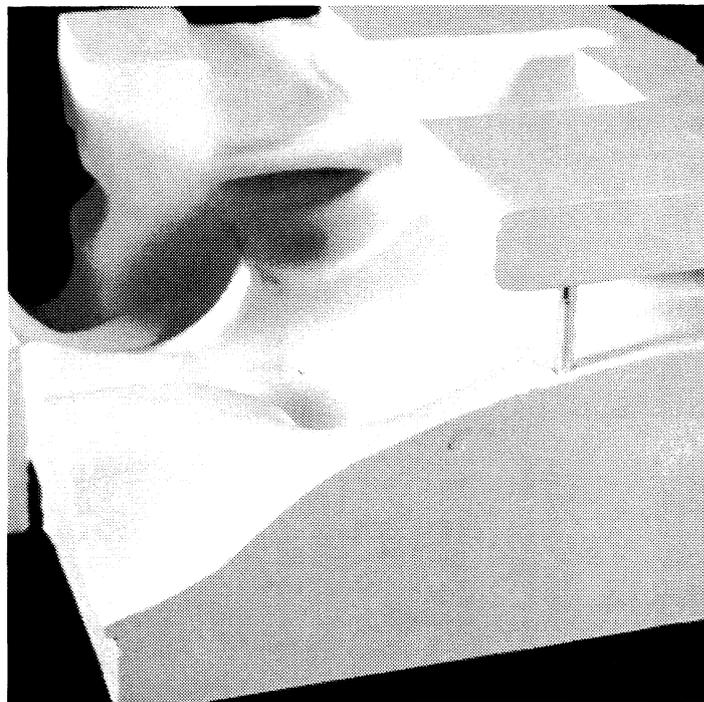
—Carl Andre

The final week of the rotation is spent constructing two solid models of the space in the room: one representing the space within the Fiat Boundary as a solid, and the other representing the Interstitial Space between the Fiat Boundary and the Bona Fide Bounds (walls, furniture, and objects.) The students construct the models by cutting sheets of extruded polystyrene to correspond to each of the Cat-Scan Sections. Once laminated, sanded, and painted, the models provide a return to the room as a whole, however this time understanding of the room has been filtered through a series of defamiliarizing exercises.

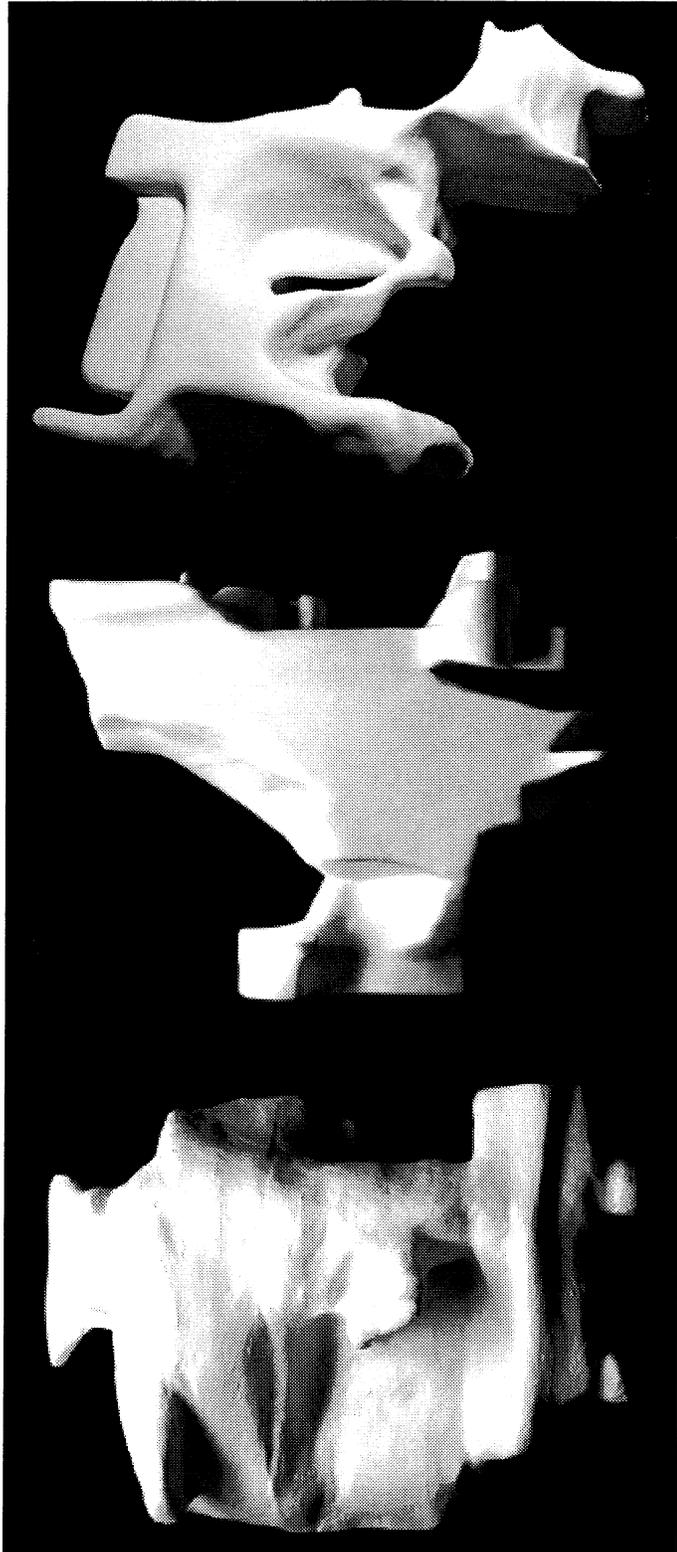
## CONCLUSION

The Form Rotation Unit has three distinct periods of making and reflection:

- a) Simple Surface Identification & Manipulation
- b) Element and Surface Identification and Manipulation
- c) Identified Surface and Element Generation



It would seem that this kind of education should be beneficial for both kinds of students outlined early on in this paper. For the traditional “professional-track” (matriculating) design student it draws out and limits the construction of form to a few highly articulated and “in-between” techniques. For the citizens of “visual culture” in our student population (all of our students, but specifically those who don’t matriculate into a professional design discipline) the Form



Rotation Unit attempts to speak to the student in terms that are palpable and familiar by working in familiar but more supple conditions of Form. The outcome of this effort results, we believe, in a student population with a better ability to better read, understand, and manipulate their environment (be it a table setting, a room, a yard, etc.) willfully, critically, and with thought.

Architectural studio education rendered to a broader, university-wide, community is an opportunity seldom considered in current curricular discussions. With this Visual Literacy program set up as a freshman learning community in which a third to a half of the annual participants don’t matriculate into the design professions let alone into architecture, the studio experience becomes a de facto liberal arts course for a portion of the students. Considering this opportunity to teach a broad cross-disciplinary student body and faced with the task of condensing an introduction to architectonic and artistic space making into an intensive pedagogical unit, we introduce Bounding Space.